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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/619,302

07/14/2003

Jun Sakuma

35860

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7590

01/20/2006

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EXAMINER

MENEFEE, JAMES A


ART UNIT

PAPER NUMBER

2828

DATE MAILED: 01/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/619,302	Applicant(s) SAKUMA ET AL. 	
	Examiner James A. Menefee	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

In response to the amendment filed 12/5/2005, the replacement drawing sheets and abstract have been entered. Claims 1-4 remain pending.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Shull et al. (US 6,724,486).

Regarding claim 1, Shull discloses in Fig. 1 a coherent light generating device comprising an excitation beam source 108 for generating a beam 122 polarized in a predetermined direction, a wavelength converting medium 120 having first and second end surfaces (upper right, lower left respectively) for receiving the excitation beam on the first end and outputting a wavelength converted beam 124 from the second end polarized in the same direction as the excitation beam (col. 10 lines 42-44), and first and second mirrors 106, 104 at the first and second end surfaces respectively for reflecting wavelength converted light and causing resonance thereof, wherein the first and second end surfaces are oriented so that the excitation and converted beams 122, 124 are incident at roughly Brewster's angle (col. 10 lines 44-46)

Art Unit: 2828

It is not explicitly disclosed that the polarization of each of the beams is P. However, this is inherent in Shull. As noted above, each of the beams may have the same polarization. Further, Brewster face by definition is only applicable to P polarization; the faces at the Brewster angle would only prevent reflection losses if the polarization were P, therefore this must be the case in Shull, that each of the beams are P-polarized.

Regarding claim 3, the nonlinear crystal is not disclosed as having an AR coating on the faces, and indeed the entire point of the faces cut at the Brewster angle is to prevent reflection losses, therefore there is no need for an AR coating and it can be concluded that there is none.

Regarding claim 4, this method is clearly met by the structure shown in the rejection of claim 1. Note that the term "optical parametric oscillation method" is deemed to be an intended use recitation in the preamble and is accordingly not given weight.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shull in view of Byer et al. (US 5,036,220). Shull discloses the limitations of claim 1 as noted above, but does not disclose that the medium is periodically poled. Byer teaches throughout a periodically poled wavelength converting medium. It would have been obvious to one skilled in the art to utilize

Art Unit: 2828

such a medium in place of Shull's medium so that quasi-phase matching may be provided, leading to the advantages noted in, for example, col. 1 line 64 – col. 2 line 6.

### *Response to Arguments*

Applicant's arguments filed 12/5/2005 ("Response") have been fully considered but they are not persuasive. Applicant argues that Shull does not disclose the claimed invention as follows:

Applicant argued that Shull does not disclose a "wavelength-converted beam reflected by said second mirror" as required by the claims. Response at 5. Applicant argues that Shull's mirrors, e.g. 104, reflect only the fundamental beam 122 and transmit the converted beam 124. This is not persuasive. Shull discloses that the mirrors 104, 106 have a reflectivity of 99% for the fundamental beam, and a transmissivity of greater than 85% for the converted beam. Col. 8 lines 52-58. While the mirrors are mostly transmissive to the converted beam, there will be reflection of up to 15%. Thus the mirrors may be interpreted to be reflective of the converted beam.

Applicant next argues that Shull does not disclose "the polarization of said excitation beam and said wavelength-converted beam is P-polarized with respect to said first end surface" as required by the claims. Response at 6. As admitted by applicant, Shull does disclose that the excitation and converted beams may be of the same polarization. Applicant argues, however, that Shull is silent as to whether p or s polarization is used.

Applicant has apparently ignored the examiner's reasoning that it is inherent for the beams to be p-polarized. See rejection of claim 1 above, and the same rejection in the prior action. Shull's crystal has faces at Brewster's angle with respect to the fundamental, i.e.

Art Unit: 2828

excitation, beam. Col. 10 lines 44-46. The purpose of this is to prevent reflection losses. *Id.* By definition, at Brewster's angle p-polarized light will not be reflected. Thus, if the purpose of making the faces at the Brewster's angle is to prevent reflection losses, then the incident beams must be p-polarized. If they were s-polarized they would be reflected, therefore there would not be a prevention of reflection losses. It is disclosed that the beams may have the same polarization, and it is inherent that they will be p-polarized in order to fulfill Shull's stated intention, therefore all of these limitations are disclosed.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

Art Unit: 2828

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'J. Menefee', is positioned above the printed name.

James Menefee  
January 19, 2006